# CHAPTER 5

# FOOD PREPARATION

The objectives of good food preparation are to conserve the nutritive value of the food, to improve the digestibility, to enhance flavor, to develop attractiveness of the original color, shape, form, and texture, and also to free the food from injurious organisms and substances.

Remember that your job as a Mess Management Specialist (MS) is of vital importance to your organization; people must eat to perform their assigned jobs. The end result of your work is for the food to be enjoyed by the patrons of your mess. To achieve this you must continually strive for perfection in providing palatable, wholesome, and attractive food.

This chapter covers some of the what, how, why, and when of food preparation.

## BASIC GUIDES

The quality of food prepared in the general mess (GM) and private messes can be controlled to a great extent by the use of management tools. These tools provide guidance for the MSs assigned by giving them a clear understanding of why they are there and how they promote efficiency and quality. These tools are the General Mess Menu, NAVSUP Form 1080, *Armed Forces Recipe Service* (AFRS), NAVSUP P-7, and the Food-Preparation Worksheet, NAVSUP Form 1090.

## FOOD-PREPARATION WORKSHEET

The first requisite to good cooking is an accurate knowledge of the items to be prepared. MS personnel have specific instructions on which foods to prepare, the recipe card number, the number of portions to prepare, time to start preparations, special instructions from the leading MS, and serving instructions. These instructions are furnished on the Food-Preparation Worksheet, NAVSUP Form 1090. See figures 5-1, 5-2, and 5-3.

### Required Use

This worksheet is required for all GMs; however, GMs having fewer than eight MSs may use a modified food-preparation worksheet (fig. 5-3). GMs with only one MS are not required to use the worksheet.

### Preparation

The information listed on the food-preparation worksheet becomes a written directive for passing information from the leading MS to the watch captains and other personnel involved in the preparation of the food. The reverse side of the worksheet maybe used to record temperature readings, meat breakout requirements, serving line and scullery temperatures, and any additional information required by the food service officer. The food-preparation worksheet is also a valuable record of the menu for the day. Information that is a "must know" for any person supervising a GM can be posted on it. This information includes the number of persons actually fed and the acceptability of specific menu items. Also, this information is useful when the leading MS prepares future menus and food-preparation worksheets. Refer to NAVSUP P-486, volume I, for detailed instructions on preparing the NAVSUP Form 1090.

The food-preparation worksheet is retained for a period of 1 year for afloat activities and 2 years for ashore activities.

### Separate Worksheet

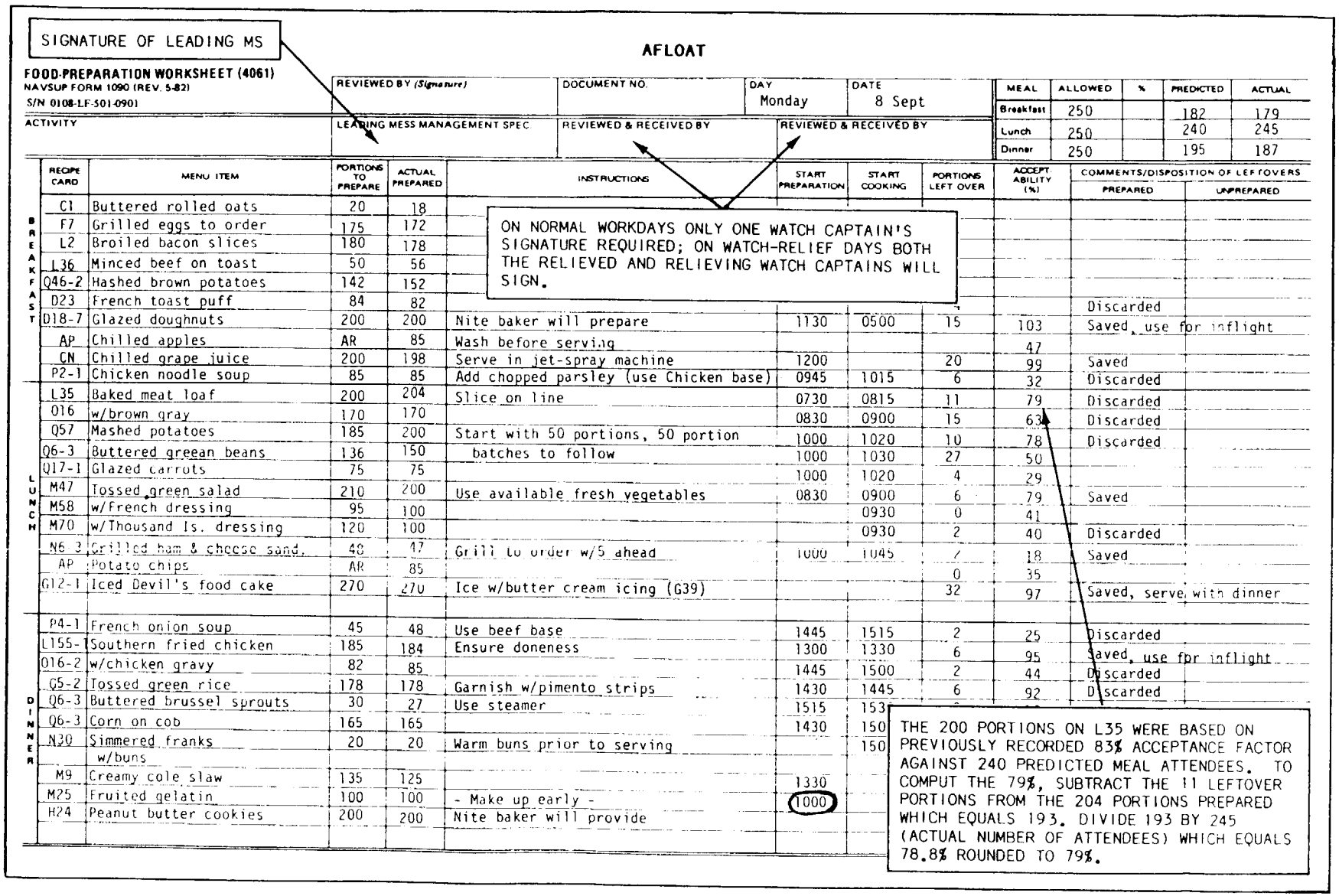
At most large GMs, food-preparation worksheets for each work center are prepared. This eliminates the necessity to include the vegetable preparation room, bakeshop, and meat preparation room on the reverse side of the food-preparation worksheet.

### Modified Worksheet

GMs having fewer than eight MSs may use the modified NAVSUP Form 1090. GMs with only one MS are not required to use the worksheet. The modfied worksheet is explained in detail in the NAVSUP P-486, volume I.

## ARMED FORCES RECIPE SERVICE

The AFRS was developed as a joint effort of all branches of the armed forces with the cooperation of the food industry. It consists of approximately 1,800




| | RECIPE CARD | MENU ITEM | PORTIONS TO PREPARE | ACTUAL PREPARED | INSTRUCTIONS | START PREPARATION | START COOKING | PORTIONS LEFT OVER | ACCEPT. ABILITY (%) | COMMENTS/DISPOSITION OF LEFTOVERS: PREPARED | UNPREPARED |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BREAKFAST | C1 | Buttered rolled oats | 20 | 18 | | | | | | | |
| | F7 | Grilled eggs to order | 175 | 172 | | | | | | | |
| | L2 | Broiled bacon slices | 180 | 178 | | | | | | | |
| | L36 | Minced beef on toast | 50 | 56 | | | | | | | |
| | Q46-2 | Hashed brown potatoes | 142 | 152 | | | | | | | |
| | D23 | French toast puff | 84 | 82 | | | | | | Discarded | |
| | D18-7 | Glazed doughnuts | 200 | 200 | Nite baker will prepare | 1130 | 0500 | 15 | 103 | Saved, use for inflight | |
| | AP | Chilled apples | AR | 85 | Wash before serving | | | | 47 | | |
| | CN | Chilled grape juice | 200 | 198 | Serve in jet-spray machine | 1200 | | 20 | 99 | Saved | |
| | P2-1 | Chicken noodle soup | 85 | 85 | Add chopped parsley (use Chicken base) | 0945 | 1015 | 6 | 32 | Discarded | |
| LUNCH | L35 | Baked meat loaf | 200 | 204 | Slice on line | 0730 | 0815 | 11 | 79 | Discarded | |
| | Q16 | w/brown gray | 170 | 170 | | 0830 | 0900 | 15 | 63 | Discarded | |
| | Q57 | Mashed potatoes | 185 | 200 | Start with 50 portions, 50 portion | 1000 | 1020 | 10 | 78 | Discarded | |
| | Q6-3 | Buttered greean beans | 136 | 150 | batches to follow | 1000 | 1030 | 27 | 50 | | |
| | Q17-1 | Glazed carrots | 75 | 75 | | 1000 | 1020 | 4 | 29 | | |
| | M47 | Tossed green salad | 210 | 200 | Use available fresh vegetables | 0830 | 0900 | 6 | 79 | Saved | |
| | M58 | w/French dressing | 95 | 100 | | | 0930 | 0 | 41 | | |
| | M70 | w/Thousand Is. dressing | 120 | 100 | | | 0930 | 2 | 40 | Discarded | |
| | N6 3 | Grilled ham & cheese sand. | 48 | 47 | Grill to order w/5 ahead | 1000 | 1045 | 7 | 18 | Saved | |
| | AP | Potato chips | AR | 85 | | | | 0 | 35 | | |
| | G12-1 | Iced Devil's food cake | 270 | 270 | Ice w/butter cream icing (G39) | | | 32 | 97 | Saved, serve with dinner | |
| DINNER | P4-1 | French onion soup | 45 | 48 | Use beef base | 1445 | 1515 | 2 | 25 | Discarded | |
| | L155-1 | Southern fried chicken | 185 | 184 | Ensure doneness | 1300 | 1330 | 6 | 95 | Saved, use for inflight | |
| | Q16-2 | w/chicken gravy | 82 | 85 | | 1445 | 1500 | 2 | 44 | Discarded | |
| | Q5-2 | Tossed green rice | 178 | 178 | Garnish w/pimento strips | 1430 | 1445 | 6 | 92 | Discarded | |
| | Q6-3 | Buttered brussel sprouts | 30 | 27 | Use steamer | 1515 | 153 | | | | |
| | Q6-3 | Corn on cob | 165 | 165 | | 1430 | 150 | | | | |
| | N30 | Simmered franks w/buns | 20 | 20 | Warm buns prior to serving | | 150 | | | | |
| | M9 | Creamy cole slaw | 135 | 125 | | | | | | | |
| | M25 | Fruited gelatin | 100 | 100 | - Make up early - | 1330 | | | | | |
| | H24 | Peanut butter cookies | 200 | 200 | Nite baker will provide | (1000) | | | | | |

**Figure 5-1.—Example of an afloat Food-Preparation Worksheet, NAVSUP Form 1090.**

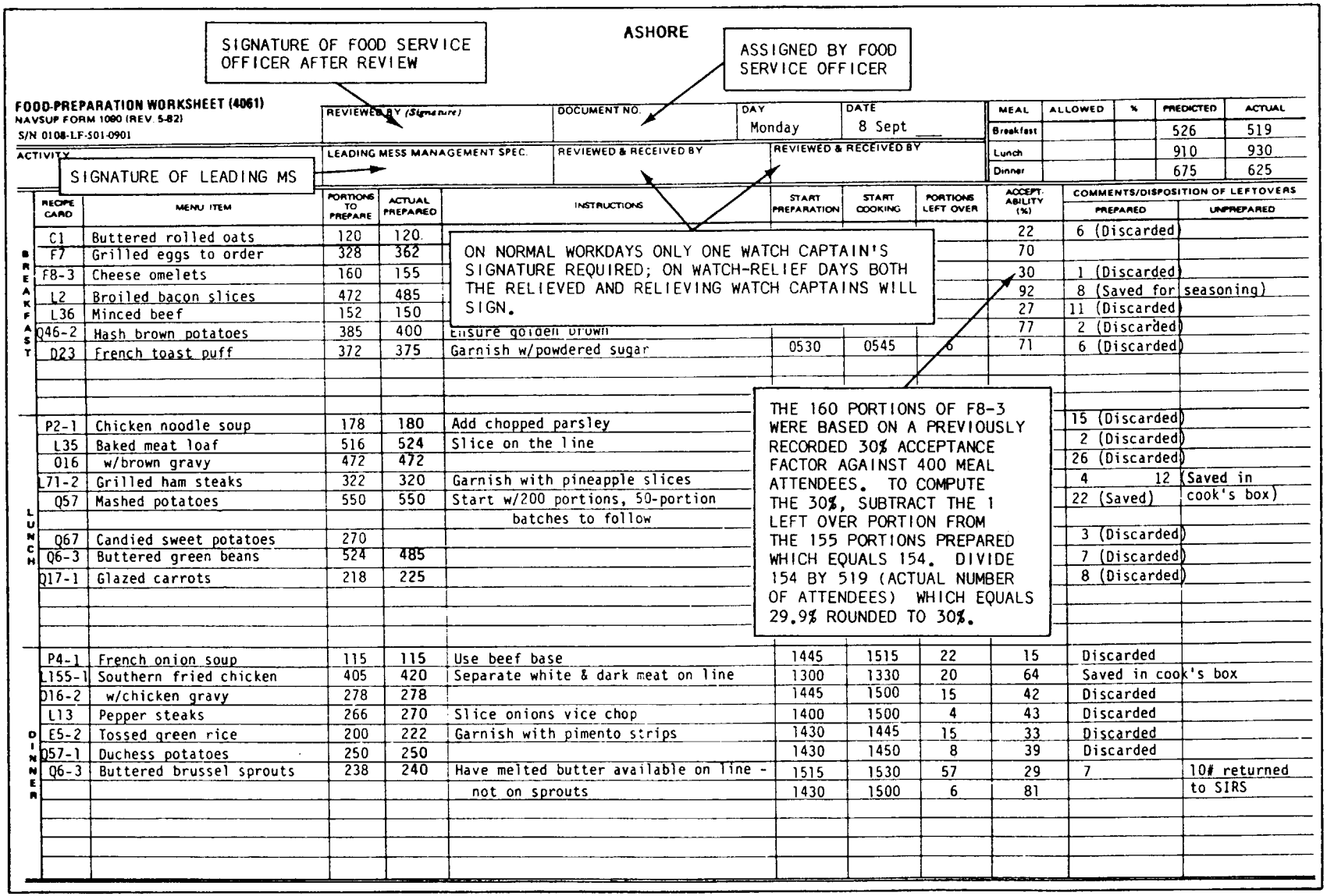



**Figure 5-2.—Example of an ashore Food-Preparation Worksheet, NAVSUP Form 1090.**

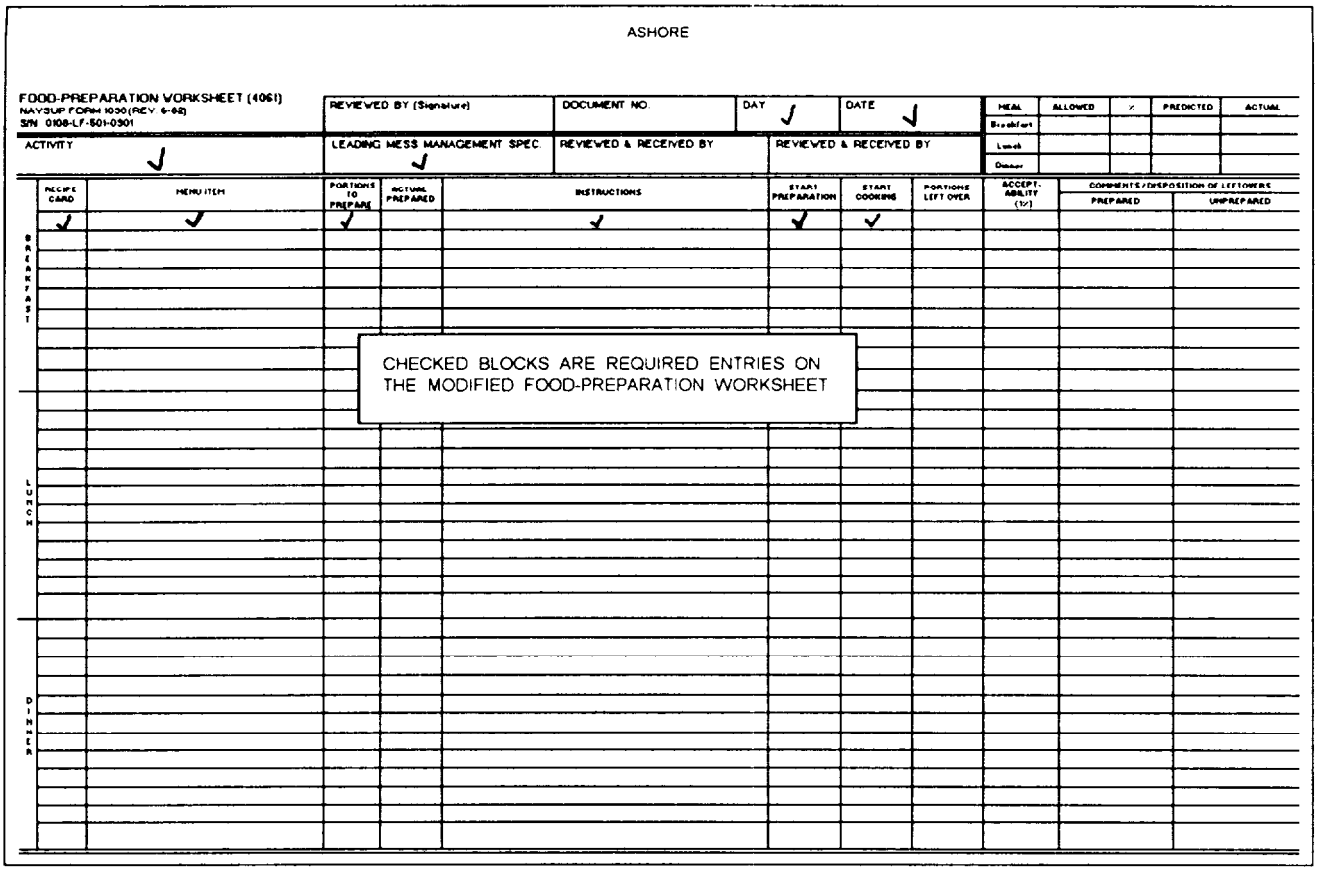



**Figure 5-3.—Required information on a modified Food-Preparation Worksheet, NAVSUP Form 1090.**

recipes and variations that have been tested and proven. The AFRS also contains the following:

- Guidance cards with product usage and preparation information
- Color photographs of finished products and some stages of preparation
- How-to-do-it line drawings

### Standardized Recipes

All food should be prepared according to the recipes published in the AFRS or the recipes that have been approved by the food service officer. Recipes in the AFRS are printed on 5-inch by 8-inch colored cards.

The use of standardized recipes ensures high quality in food preparation. It also eliminates guesswork and prevents variations in quality and quantity. The use of exact amounts of the various ingredients produces accurate yields, prevents leftovers, and promotes food cost control. The food items needed for the day's menu are requisitioned from the bulk issue room storekeeper by the watch captain.

**YIELD.—** Each recipe in the AFRS is designed to yield 100 portions; however, the yield of some recipes is given in numbers or volume; for example, 2 pans, 8 loaves, and 6 1/2 gallons, depending upon the food to be prepared.

**INGREDIENTS.—** Ingredients are listed in the order used. The specific form or variety of each ingredient is indicated; for example:

Flour, general-purpose

Flour, bread

The shape, size, or form of an ingredient is specified; for example:

Ham. cooked, 1/2-inch cubes

Onions, dry, sliced

Nuts, unsalted, chopped

Temperatures of ingredients are specified in many recipes. Descriptive terms are also used; for example:

Egg whites (room temperature)

Liver, sliced, partially thawed

Water, warm (110°F)

**MEASURES AND WEIGHTS.—** Measures and weights are the exact amount of each ingredient needed for 100 portions. Amounts are listed parallel to the list of ingredients. Quantities of dry ingredients weighing more than 1/2 ounce usually are given as both weights and measures. Most liquid ingredients are measured, not weighed.

On the right side of the Measures column, a blank space has been reserved for inserting the actual amounts of ingredients needed to prepare the number of portions the individual galley needs. These quantities may be inserted in pencil directly on the recipe card and then changed as necessary.

**METHOD.—** Method describes how the ingredients are to be combined and cooked and represents the best accepted cooking procedures. For example, the method will describe the best way to sift dry ingredients together, to thicken a sauce, or to fold in beaten egg whites. Methods are standardized since the same terms are used wherever the same technique appears. The method contains directions for the most efficient order of work, and eliminating unnecessary tools and equipment and unnecessary steps in preparation.

The directions are stated in simple, clear terms for incorporating the ingredients. Each step begins with an action verb such as dissolve, divide, drain, sift, flatten, cover, pour, sprinkle, or bake. These words are the keys to proper procedures and should be closely followed.

Included under method are specific details such as cooking time.

If certain ingredients are to be set aside for later use, this is so stated. For example, "Gradually add sugar, beat to light, firm peak. Set aside for use in step 6."

In a few instances, serving suggestions are included under method. For example, "Serve with lemon sauce (Recipe No. K-9) or, if desired, top with whipped cream (Recipe No. K-15)."

**ABBREVIATIONS.—** The basic abbreviations used in the AFRS are as follows:

Volume:

tsp = teaspon(s)

tbsp = tablespoon(s)

c = cup(s)

pt = pint(s)

qt = quart(s)

gal = gallon(s)

Ingredients:

A.P. = as purchased

E.P. = edible portion (for example, potatoes, peeled, prepared for cooking)

Temperature:

F = degrees Fahrenheit

Weights:

oz = ounce(s)

lb = pound(s)

Containers:

cn = can(s)

cyl = cylinder(s)

jr = jar(s)

**NOTES.—** Notes appearing below the recipe contain supplemental information such as possible substitutions for ingredients. Specific techniques are included to supplement information contained in the Method column; for example, "If a candy thermometer is not available, heat mixture in step 1 until it forms a soft ball in cold water." Serving tips also may be included as notes; for example, "If desired, top with whipped cream (Recipe No. K-15) before serving." "In step 3, if convection oven is used, bake at 350°F for 20 to 25 minutes."

**VARIATIONS.—** Variations are included on many recipes. They describe different ways to prepare the product and constitute a major addition to the total number of recipes contained in the AFRS. Each variation is listed as a separate recipe in the index. For example, the recipe for yellow cake includes these variations: (1) banana-filled layer, (2) Boston cream pie, and (3) chocolate cream. The variations in this instance are named according to the principal ingredient that alters the basic recipe. In other recipes where different cooking techniques are used, these may determine the name of the variation.

### Recipe Supplements

Recipe supplements are the written source that explains how to prepare certain types of basic food. Included as recipe supplements are guideline cards, index cards, and index of recipes.

**GUIDELINE CARDS.—**Guideline cards found in some of the recipe sections are directions for preparing a basic type of food. For instance, a guideline card is

used for the makeup of piecrust for a one-crust pie and a two-crust pie. This guideline card eliminates the need to repeat this information on the many different recipes using piecrust.

Guideline cards in the salad, fish, poultry, and vegetable sections include breakout information and the size, count, and recommended use of products. In other instances, a guideline card is used instead of, or as a summary of, recipe information. For instance, in the Vegetable section guideline cards are included for preparing canned, fresh, and frozen vegetables.

**INDEX CARDS.—** Index cards are found at the beginning of each section and give a complete listing in alphabetical order by type of food or dish of all recipes contained in that section.

An additional breakdown of the index is given for recipe variations. For example, under Yellow Cake, nine variations are listed alphabetically. Indexes are valuable tools for finding and using appropriate recipes.

**INDEX OF RECIPES.—** The separate, consolidated index of recipes in the AFRS is a valuable reference for menu planners. The recipes in this index are grouped conveniently as follows:

A. General Information

B. Appetizers and C. Beverages

D. Breads and Sweet Doughs

E. Cereals and Pasta Products

F. Cheese and Eggs

G. Cakes, Fillings, and Frostings

H. Cookies

l. Pastry and Pies

J. Puddings and Other Desserts

K Desserts (Sauces and Toppings)

L. Meat

L. Fish

L. Poultry

M. Salads

M. Salad Dressings and Relishes

N. Sandwiches

O. Sauces, Gravies, and Dressings

P. Soups

Q. Vegetables

The General Information section of the AFRS has guidelines for basic information. One of the first things you should do is become familiar with this section. Shown in figure 5-4 is a copy of the general information index card that lists the recipe card number by the basic information topic.

**Recipe Adjustments**

All the recipes contained in the AFRS are based on a standard of 100 portions. However, the number of patrons served per day (or per meal) changes constantly, requiring changes in the quantities of food being prepared. There are various types of recipe adjustments.

**YIELD ADJUSTMENT.—** To increase or decrease a recipe to obtain the desired number of portions, it is necessary to obtain a working factor. Multiply the quantity of each ingredient by the working factor and convert the quantity into a workable unit as follows:

Step 1. To obtain a working factm, divide the number of portions desired by 100.

Example:

$$\frac{\text{348 (number portions desired)}}{100} = \text{3.48 (working factor) or}$$

348 ÷ 100 = 3.48.

Step 2. To determine the quantity of each ingredient to use, multiply the quantity of each ingredient listed in the recipe by the working factor obtained in step 1.

Example:

1.25 cornstarch (quantity in recipe) x 3.48 (working factor) = 4.35 lb cornstarch (quantity to use).

**QUANTITY ADJUSTMENT.—** A recipe maybe adjusted on the basis of the quantity of an ingredient to be used. To obtain a working factor, divide the number of pounds you have to use by the number of pounds required to yield 100 portions:

$$\frac{\text{102 lb (quantity to be used)}}{\text{30 (number pounds to yield 100 portions)}} = \text{(3.40 working factor) or}$$

102 ÷ 30 = 3.40.

**SERVING SIZE ADJUSTMENT.—** Recipes may be adjusted to yield a specific number of portions of a specific size as follows:

Step 1. Divide the desired portion size by standard portion of the recipe.

INDEX A. GENERAL INFORMATION No 0



**Figure 5-4.—General information card (front and back).**

Example:

$$\frac{\text{3 oz (desired size)}}{\text{4 oz (standard portion size)}} = 0.75 \text{ (size factor) or}$$

3 ÷ 4 = 0.75.

Step 2. Multiply the number of portions needed by the size factor and divide the answer by 100 to obtain the working factor.

Example:

348 (number portions desired) x 0.75 (size factor) = 261.

$$\frac{261}{100} = 2.61 \text{ (working factor) or } 261 \div 100 = 2.61.$$

Step 3. Multiply the quantity of each ingredient in the recipe by the working factor to determine the quantity to use.

Example:

2 lb cornstarch (quantity in recipe) x 2.61 (working factor) = 5.22 lb cornstarch (quantity to use).

**Volume Adjustment**

First obtain a working factor by dividing the number of servings needed by 100 as shown in step 2.

333 ÷ 100= 3.33.

Then multiply the quantity of each ingredient by the working factor. You will round off to the nearest 1/4 teaspoon. For example, the recipe calls for 6 gallons of water per 100 portions. Portions to prepare are 333.

333 ÷ 100= 3.33 working factor (w/f).

Step 1. w/f x gallons (recipe)= gallons to use

```
3.33 w/f
  x6 gl
19.98 gl
```

Step 2. Decimal (of gal) x 4 = quart

```
.98 gl
 x4 qt
3.92 qt
```

Step 3. Decimal (of quart) x 2 = pint

```
.92 qt
 x2 pt
1.84 pt
```

Step 4. Decimal (of pint) x 2 = cup

```
.84 pt
 x2 c
1.68 c
```

Step 5. Decimal (of cup) x 16= tablespoon

```
.68 c
 x16 tbsp
10.88 tbsp
```

Step 6. Decimal (of tbsp) x 3 = teaspoon

```
.88 tbsp
 x3 tsp
2.64 tsp
```

Step 7. Round off tsp decimal portion — .64 tsp is equal to 3/4 tsp

Thus, the amount of water needed for 333 portions is 19 gl, 3 qt, 1 pt, 1 c, 10 tbsp, and 2 3/4 tsp.

**CONVERTING AND ROUNDING CALCULATED QUANTITIES.—** When a recipe is increased or decreased or ingredient quantities are altered it is usually necessary to convert the amount calculated to another unit of measure because, in most instances, a part of a pound or a partial measure results. To obtain a usable figure, (a) round off the calculated figure given in decimal pounds or measures to a whole figure or (b) convert partial pounds into ounces and the partial measures into smaller units; for example, partial quarts into cups.

**CONVERTING FRACTIONAL WEIGHTS.—** When increasing or decreasing recipes, the division or multiplication of pounds and ounces is expressed as decimals to simplify cumbersome fractions. For example, if the quantity of an ingredient is multiplied by a working factor, the calculation is as follows:

1.25 lb x 3.48 (working factor)= 4.35 lb.

The quantity, 4.35 pounds, could be expressed by converting the fractional part of the pound into ounces.

Another means of converting fractional parts of a pound is to make the calculation instead of consulting the conversion table. The part of the pound is converted to ounces by multiplying the figure by 16 ounces.

For example: 0.35 x 16 oz = 5.60 oz.

**ROUNDING OFF WEIGHTS.—** After the part of the pound has been converted to ounces (0.60), as indicated in the Recipe Conversion Card A-1(1), decimals may be rounded off to provide whole units of weights or measure. Round off decimal weights as follows:

| Decimal | Round to |
|---|---|
| 0.01 to 0.12 | 0.00 or oz |
| 0.13 to 0.37 | 0.25 or 1/4 oz |
| 0.38 to 0.62 | 0.50 or 1/2 oz |
| 0.63 to 0.87 | 0.75 or 3/4 oz |
| 0.88 to 0.99 | 1.00 or 1 oz |

Using the previous example, the 4.35 pounds (or 4 pounds 5.60 ounces) would be rounded to 4 pounds 5 1/2 ounces.

**ROUNDING OFF VOLUME MEASURES.—** When converting volume measures, rounding off is also necessary. Round off volume measures as follows:

| Calculated volume Measure | Round to |
|---|---|
| 5 gal or more | Closest full qt |
| 5 1/4 qt to 4 3/4 gal | Closest full cup |

5 1/4 cups to 5 qt . . . . . Closest full 1/2 cup

2 3/4 to 5 CUPS . . . . . Closest full 1/4 cup

If the quantity being measured is less than a quart, it is more practical to adjust the volume to tablespoon and teaspoon measures as follows:

| Calculated volume measure | Round to |
|---|---|
| 1 1/4 to 2 1/2 cups | Closest tbsp |
| 9 tbsp to 1 cup 3 tbsp | Closest tsp |
| 5 to 8 tbsp | Closest 1/2 tsp |
| Under 5 tbsp | Closest 1/4 tsp |

To convert volume measures from gallons, quarts, cups, tablespoons, and teaspoons, see figure 5-5.

**Measuring Utensils.—** Measuring utensils include both measuring spoons and volume measuring pitchers. Measuring spoons (fig. 5-6, view A) are used for both liquid and dry ingredients and come in four basic sizes. Measuring pitchers (fig. 5-6, view B) also come in four basic sizes (gallon, quart, pint, and cup) and are described as follows:

1. The 1-gallon measure is used mostly for liquids. Markings go completely around the utensil in 1-quart increments.
2. The 1-quart measure is used mostly for liquids. Markings go completely around the utensil in 1-cup increments.
3. The 1-pint measure is used mostly for liquids. Measurement markings go completely around the utensil in 1/2-cup increments.
4. The 1-cup measure is used for both liquid and dry ingredients. Measurement markings are on both sides.
   a One side is marked in 1/4-cup, 1/2-cup, 3/4-cup, and 1-cup increments.
   b. The other side is marked in 1/3-cup, 2/3-cup, and 1-cup increments.

Measuring utensils are accurate and easy to use. However, they must be used properly to obtain high-quality products. Figure 5-7 shows the measurement equivalents for both types of measuring utensils.

**Even Balance Scale.—** The even balance scale (fig. 5-8) is normally used to weigh solid and dry ingredients before mixing. It may also be used to weigh products shaped or formed during preparation to ensure portion control.

Figure 5-8 also shows the parts of the even balance scale. These parts are explained as follows:

1. The stand (or base) supports the entire mechanism.

2. The weight plate is where the counterweights are placed for weighing ingredients.

3. The location of the slide bar and the scoop plate.

| GALLONS | QUARTS | PINTS | CUPS | FLUID OUNCES | TABLESPOONS | TEASPOONS |
|---|---|---|---|---|---|---|
| 1.00 | 4.0 | 8.0 | 16.0 | 128.0 | 256.0 | 768.0 |
| .50 | 2.0 | 4.0 | 8.0 | 64.0 | 128.0 | 384.0 |
| .25 | 1.0 | 2.0 | 4.0 | 32.0 | 64.0 | 192.0 |
| .12 | .5 | 1.0 | 2.0 | 16.0 | 32.0 | 96.0 |
| .06 | .25 | .5 | 1.0 | 8.0 | 16.0 | 48.0 |
| .... | .125 | .25 | .5 | 4.0 | 8.0 | 24.0 |
| .... | .... | .125 | .25 | 2.0 | 4.0 | 2.0 |
| .... | .... | .... | .125 | 1.0 | 2.0 | 6.0 |
| .... | .... | .... | .... | .5 | 1.0 | 3.0 |
| .... | .... | .... | .... | .... | .33 | 1.0 |

**Figure 5-5.—Equivalents of volume measurements.**

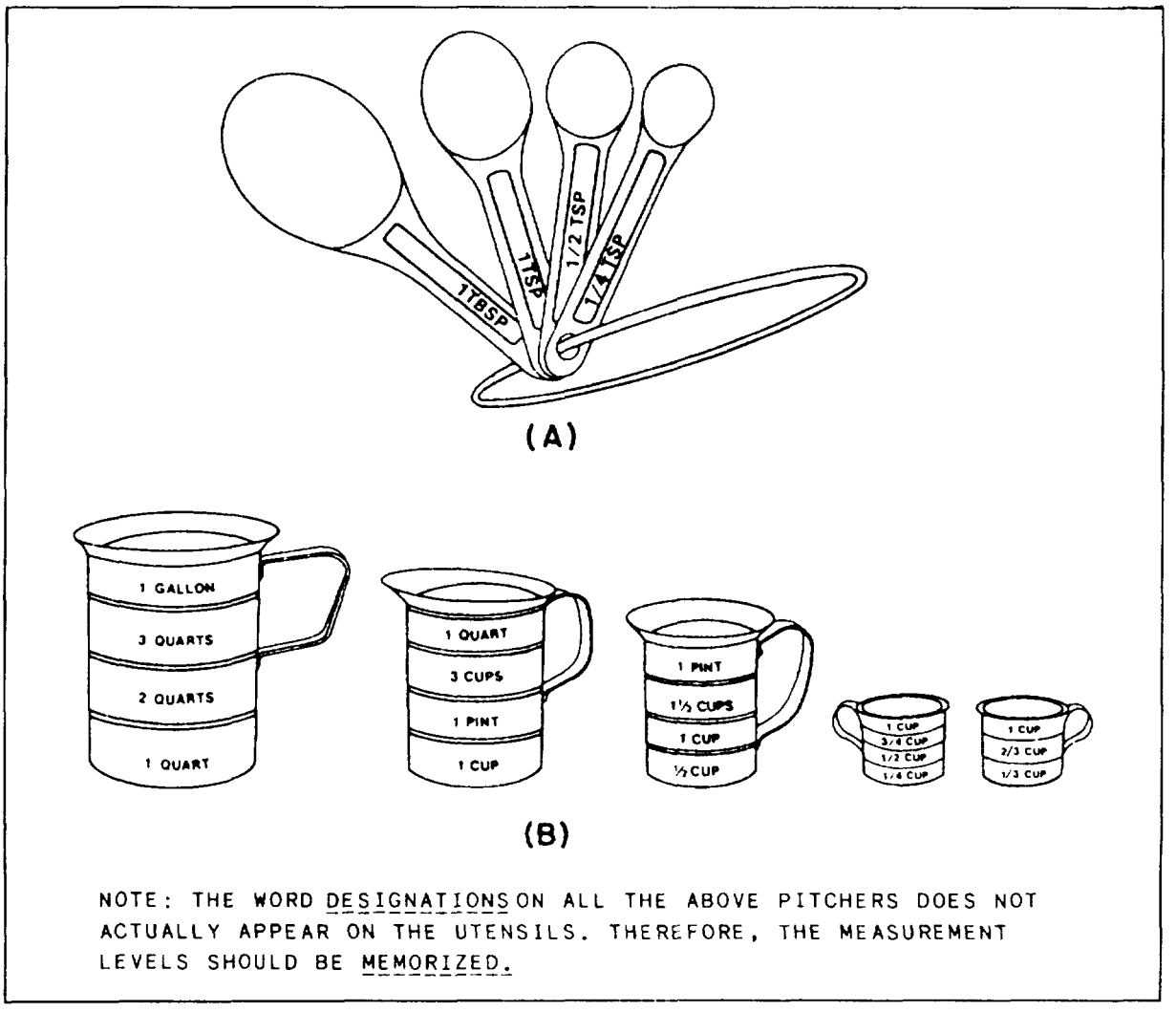



**Figure5-6.—Measuring utensils (views A and B).**

4. The scoop holds ingredients being weighed. The scale must be balanced to the scoop (as explained later).

5. The slide bar is divided into 1/4-ounce increments.

6. The basic scale, with scoop, can weigh amounts from 1/4 ounce to 16 ounces.

7. Counterweights placed on the weight plate weighing more than 16 ounces come in 1-, 2-, and 4-pound sizes. Maximum capacity of the scale with counterweights is 8 pounds.

**BALANCING THE SCALE.—** The procedures used to balance the scale are as follows:

1. Place scale on a level surface; then add scoop.
2. Move the slide bar weight completely to the left.
3. Balance the scale to the scoop. If the scale is badly out of balance, lead pellets should be added beneath the weight plate.

**USING THE EVEN BALANCE SCALE.—** To use the scale proceed as follows:

1. Place wax paper in scoop.
2. Add weights, as required, to weight plate of scale.
3. Adjust slide as required.
4. Place ingredients on wax paper until scale balances.
5. Remove wax paper with ingredients from the scoop and set it aside.

**CARE OF THE SCALE.—** Wipe the scale with a damp cloth or sponge. Never put the entire scale into the deep sink because it will eventually rust.

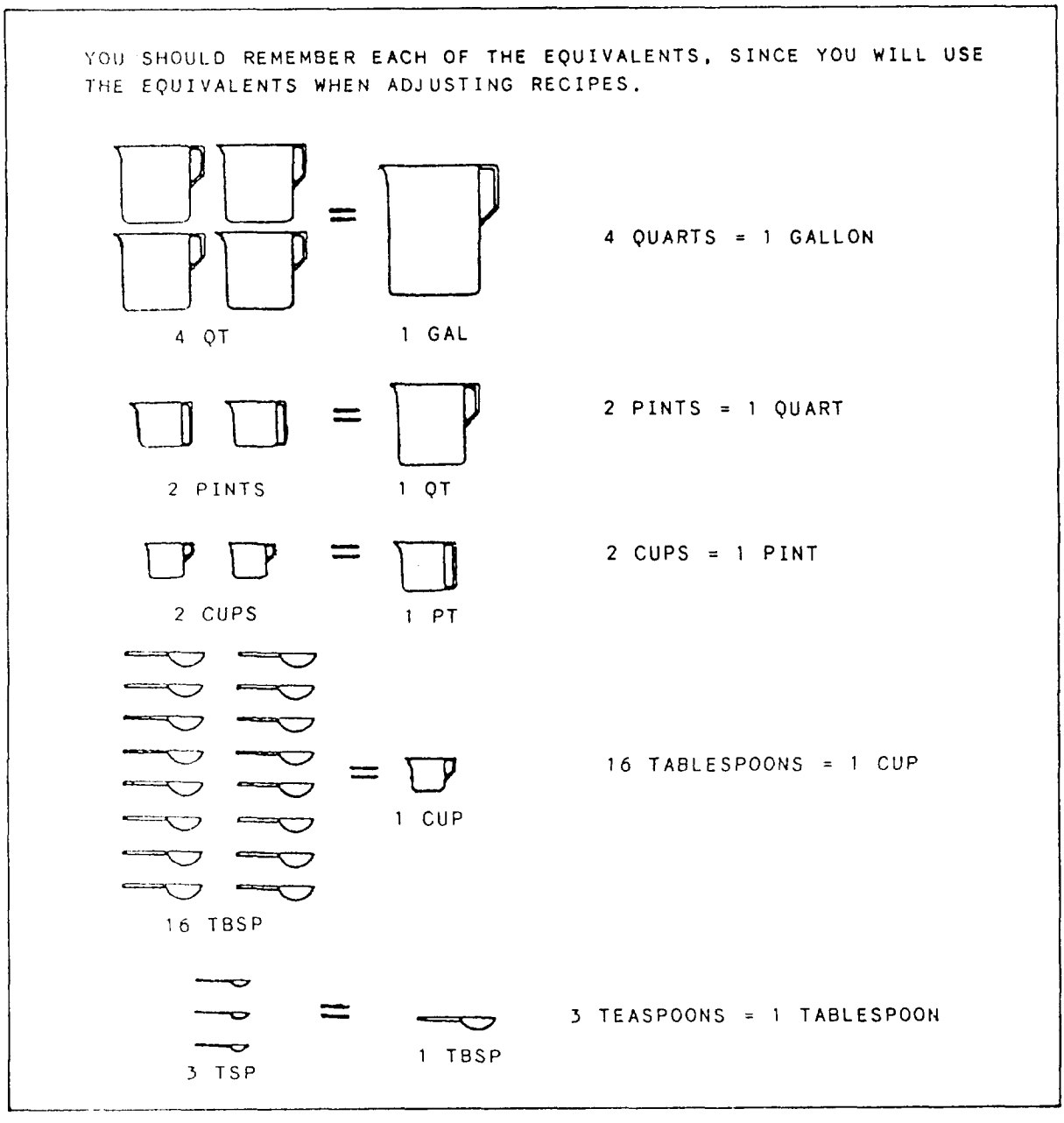



**Figure 5-7.—Equivalents of measures.**

## BASIC FOOD PREPARATION

Cooking is the art of preparing food in such away that it will appeal to the eye, be tasty, be easily digested, and furnish nourishment. This section provides information on food types, methods of cooking, and specific preparation techniques that may be used to produce high-quality products. The sanitary aspects of food preparation will be considered first.

## SANITARY ASPECTS

Every precaution should be taken in the handling of food to prevent contamination. The following paragraphs explain the procedures that must be followed during the preparing and handling offood.

### Safe Holding Temperatures for Cooked Foods

Protein foods that are not served immediately after they are cooked must be either chilled to temperatures of 40°F and lower (but not frozen) or held at 140°F and higher. Protein foods include meats, fish, poultry, gravies, meat stock, soups, eggs, custards, cream fillings, and milk.

Cooked protein foods that have been held at temperatures between 40°F and 140°F for more than 4

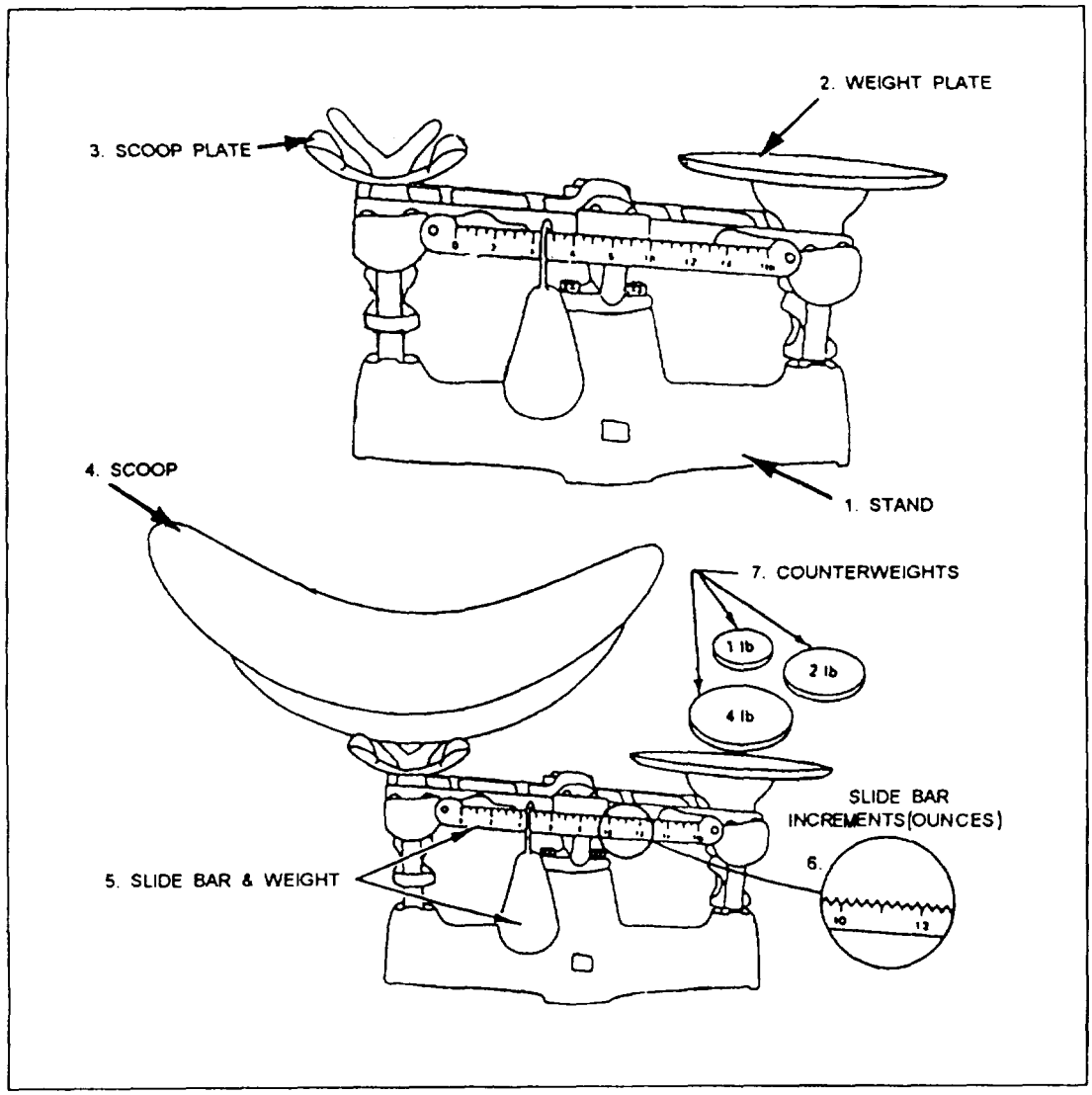



**Figure 5-8.—Even balance scale.**

hours should be considered unsafe for consumption and discarded. The exception to this rule is reconstituted dehydrated egg mix. Reconstituted egg mix, if not used immediately, must be placed in a tightly covered container in the refrigerator and used within 1 hour. If foods are refrigerated at intervals and then intermittently permitted to warm up, the total time of the various periods between 40°F and 140°F must not exceed 4 hours. Protein foods composed of ingredients that are hand-peeled, hand-sliced, or hand-diced after they are cooked should never be used as leftovers. The 4-hour limit between temperatures of 40°F and 140°F is usually taken up in preparing, chilling, and serving these foods. Such foods include, but are not necessarily limited to, potato, chicken, turkey, macaroni, shrimp, and egg salads. Hand preparation not only increases the chances of contamination, but also increases the length of time that these foods have been held at room temperature.

You should not return opened jars or bowls of mayonnaise and cooked salad dressings from salad bars to refrigerators for reuse at a later meal because of the danger of miscalculation of total lapsed time that these salad dressings have been held at temperatures between 40°F and 140°F. Instead, mayonnaise and cooked salad dressings should be placed on the salad bar in small quantities and must not be returned from the salad bar for reuse. If economically feasible, individual packets or servings of items such as catsup, mustard, and mayonnaise should be used on the salad bar. This will prevent waste and be more sanitary.

### Care of Leftovers

When leftovers or warm foods are chilled, care should be taken to ensure prompt and thorough chilling (40°F or below) to the center of the food mass. Foods that are to be refrigerated should be placed in shallow pans to a depth of not more than 3 inches and should be covered with lids or waxed paper. Large deep pans must not be used since the center of the food may remain warm long enough to permit the growth of harmful bacteria. Foods to be chilled must be placed in the chill box immediately and the containers labeled with the time and date of preparation. Do not save leftovers for more than 36 hours. Freezing leftovers is prohibited.

## EGGS

Eggs are a valuable food. They contain minerals, vitamins, and protein that build new body tissues, repair old tissues, and regenerate the blood. Eggs are easily digested and, if properly cared for and properly prepared, are delicate in flavor.

### Forms of Eggs

The Navy procures eggs in the following forms:

- Fresh eggs are procured in two types, those that are no more than 30 days old and those that have been treated with oil or other processing fluids so they have a storage life of up to 6 months when refrigerated. Both types should be stored at 29°F to 32°F in a dry, well-ventilated place away from strong odors such as onions.

When several fresh eggs are to be used, break each one separately into a small dish. Thus any egg that may have a strong odor or poor appearance can be discarded without spoiling the others.

- Three kinds of frozen eggs are available: whole table, whole bakery, and frozen egg whites. To thaw frozen eggs, place them in a chill or thaw box at 36°F to 38°F, or place them in a sink and cover the container with cold water. Thirty-pound cans will take 2 days or more to thaw. A day or more is required to thaw 10-pound cans or cartons at 36°F to 38°F. Do not thaw frozen eggs at room temperature. The outer edges will reach a temperature where bacteria can grow, while the center of the container will remain frozen.

Once the eggs are thawed, they are very perishable. Any leftover thawed eggs should be placed in a tightly covered container in a refrigerator and used within 24 hours. Do not refreeze thawed eggs.

Frozen whole table-type eggs should be used for scrambled eggs and omelets. The bakery-type frozen eggs and frozen egg whites should be used only in baking. Egg whites that are used in pie meringues must be baked as a precaution against food-borne illness.

- Dehydrated egg mix is prepared from fresh whole eggs, nonfat milk, vegetable oil, coloring material, and salt. The mix may be used to make scrambled eggs and omelets, French toast, griddle cakes, and can be used in place of fresh eggs in baked foods, Reconstituted egg mix, if not used immediately, must be placed in a tightly covered container in the refrigerator and used within 1 hour. Dehydrated egg mix cannot be used in uncooked dishes.

### Egg Preparation

Guidelines for preparation of raw (fresh) eggs are contained in the NAVSUP P-421. These guidelines are provided because fresh eggs that have been contaminated with salmonella cause outbreaks of food-borne illness. The concern remains for batch preparation of whole, fresh eggs for recipes that are uncooked or almost cooked.

Principal policies for preparing eggs are summarized next:

- Eggs not cooked to heat all parts to 165°F or above will be individually cooked and served only upon the request of a patron. Break no more than six eggs per holding bowl. Use a clean sanitized bowl for each six eggs.

- Serving raw eggs and foods containing raw eggs is prohibited.

- Recipes requiring uncooked eggs such as mayonnaise, eggnog, and ice cream, will be prepared using only pasteurized frozen table eggs.

- French toast will be prepared using only pasteurized frozen table eggs or pasteurized dehydrated egg mix.

- Scrambled eggs in bulk amounts may be prepared using pasteurized frozen table eggs, pasteurized dehydrated egg mix, or fresh shell eggs. If fresh shell eggs are used, the following provisions are required:

  Cook bulk amount of scrambled eggs in small batches, no more than 3 quarts, until there is no visible liquid egg.

Hold until served at 140°F or higher, such as on a hot food table.

Do not add a batch of just cooked scrambled eggs to the batch held on a hot food table. A clean sanitized container is required for each 3 quarts of scrambled eggs.

- Egg-breaking machines will not be used by Navy and Marine Corps foodservice facilities.

### Cooking Methods

The AFRS has recipes with detailed procedures for cooking omelets and for fried scrambled, poached, and soft- and hard-cooked eggs. Key steps for each of these are summarized as follows.

**FRIED EGGS.—** Fried eggs are made using only fresh shell eggs. Cook them gently until the white is firm. Fried eggs must be cooked at low temperatures. High temperatures will cause them to be tough. Eggs may be fried in greased pans in the oven. Oven-fried eggs require a slightly longer cooking time than those cooked on a griddle.

**SCRAMBLED EGGS.—** Scrambled eggs maybe made from fresh eggs, frozen whole table eggs, or dehydrated egg mix. Chopped ham or shredded cheese can be added for variety. If scrambled eggs are prepared in bulk for service from steam table inserts, you must follow the provisions set forth in the Safe Egg-Handling Guidelines contained in NAVMED P-5010.

**POACHED EGGS.—** Poached eggs are prepared by breaking a fresh shell egg into a small bowl and slipping it from the bowl into boiling water. Then reduce the heat and allow the egg to simmer until the white is fully formed. Finally, remove the poached egg from the water with a perforated spoon.

**SOFT-COOKED EGGS.—** Remove eggs from the refrigerator about 30 minutes before cooking. Leave the eggs in the shell. Place them in a wire basket and lower the basket into hot water. Bring to a boil; reduce heat; simmer the eggs for 4 minutes.

**HARD-COOKED EGGS.—** Hard-cooked eggs may be served whole and unpeeled for box or bag lunches, sliced or quartered in salads, as a garnish, or as an ingredient in dishes such as potato salad. Simmer 10 to 15 minutes.

Place hard-cooked eggs in cold water immediately after cooking. This will prevent the yolk from discoloring. Leave them in their shells if they are to be stored in the refrigerator after cooking. They may darken if peeled ahead of time. Leftover, hard-cooked egg yolks may be used to garnish green salads, potato salad, macaroni salad, or cooked vegetables. To prevent the yolk from crumbling when slicing hard-cooked eggs, dip the knife into cold water before slicing.

**OMELETS.—** Omelets are prepared from fresh whole eggs, frozen whole table eggs, or dehydrated egg mix. The eggs are beaten just enough to blend the yolks and whites. Crumbled bacon, shredded or ground cheese, chopped ham, mushrooms, or vegetables may be added for variety. Individual portions of the eggs are poured onto a greased griddle. The omelet is not stirred during cooking, but is lifted to allow the uncooked portion to flow onto the hot griddle. When the omelet is set, it is folded in half or into thirds, then must be allowed to fully cook.

## FRUITS AND VEGETABLES

Fruits and vegetables are complex carbohydrates that provide important vitamins, minerals, and dietary fiber. Additionally, they provide pleasant contrasts in flavor, texture, and color to meals.

### Fruits

Fruit is procured by the Navy in the fresh, frozen, canned, dehydrated, and dried states. Fresh and processed fruits may be combined to vary the flavor and texture.

Every daily menu should include some fruit. It adds color, variety, food value, and a refreshing flavor to any meal. Fruit is among the least expensive and the most nutritious of all foods and has the distinction of being the most versatile. At breakfast fruit can be served alone or in combination with cereal. It can be prepared as appetizers, salads, main dishes, relishes, desserts, or snacks It is excellent as a garnish and sometimes acts as seasoning. Fruit is an active partner in many meat dishes. Baked ham and pineapple are often teamed together, as are pork and applesauce, or turkey and cranberry sauce.

**FRESH FRUITS.—** Fresh fruits are highly perishable and must be handled carefully to maintain quality. Some fruits are available year-round. Others are available seasonally, such as melons and berries.

Before fresh fruits are used, wash them thoroughly to remove any insect spray that may be present. If possible, pare fresh fruits immediately before they are used. When pared and left exposed to the air, some fresh fruits become discolored. Discoloration may be

prevented by covering the fruit with lemon juice, or by dipping the fruit in a antibrowning agent. Follow the directions on the guideline cards for antibrowning agents or those on the actual container.

**FROZEN FRUITS.—** Frozen fruits are convenient and available year-round. Little preparation is needed, there is no waste, and less storage space is required than for fresh fruit. Most frozen fruits are packed with sugar or syrup. Thaw them in the unopened container and use immediately to maintain quality.

The Navy procures frozen fruits such as berries (strawberries, boysenberries), cherries, and peaches. Frozen fruits are closest to the fresh counterpart in flavor and appearance. They may be thawed by placing the unopened container in the chill space 24 hours before they are to be used. This allows the frozen fruit to thaw completely and more evenly throughout.

**CANNED FRUITS.—** Canned fruits require no refrigeration and are available all year. They may be packed in water, syrup, or natural juices. All canned fruits should be served chilled.

**DRIED FRUITS.—** Dried fruits, such as raisins, apricots, prunes, and dates, can be used for pastry and pie fillings and as ingredients in cakes, cookies, breads, sweet doughs, and salads.

Wash dried fruits thoroughly before they are used. They may be soaked to reduce cooking time, but avoid a long soaking period because it produces a watery, tasteless fruit. Cook raisins and dates without soaking. If sugar is to be added, it should be at the end of the cooking period. If it is added at the beginning, it interferes with the absorption of water.

**DEHYDRATED FRUITS.—** Dehydrated fruit, such as applesauce, maybe used in some recipes when fresh or canned fruit is not available. Check the AFRS for directions.

Dehydrated fruits, such as instant applesauce, apple slices, and diced apricots, are readily reconstituted by adding a proportionate volume of water to a specified weight of the particular dehydrated fruit. Like the dehydrated vegetables discussed earlier, dehydrated fruits because of their small weight and volume are convenient to store. Dehydrated fruits maybe used for desserts such as puddings, pies, and cakes, or they may be reconstituted and served at any meal.

### Vegetables

Vegetables of all types are nutritional necessities in a well-balanced diet. In addition to the contribution of important minerals and vitamins, vegetables add color, flavor, and interest to meals. All too frequently vegetables are rejected or left uneaten when they are poorly cooked; consequently, they are not pleasing in appearance or flavor. A vegetable can become unpopular simply from being overcooked, watery, or poorly seasoned. Furthermore, the food value may be lost or diminished by improper handling and cooking. Vegetables are bought by the Navy in the following forms: fresh, frozen, canned, dried, and dehydrated.

**FRESH VEGETABLES.—** Most raw fresh vegetables have waste or portions that are not edible. When you peel, scrape, brush, trim, or cut these vegetables, it is important not to destroy or damage edible portions and especially not to lose the valuable nutritional elements that are usually contained close to the outer skin or peel. Select vegetables about equal in size, or cut them into pieces of equal size. Then all the pieces will be cooked uniformly in the same length of time. Plan for cooking vegetables with the peel on whenever possible, especially potatoes. If potatoes must be peeled, do it very carefully so as to make thin peelings. Much of the food value in a potato lies close to the skin.

**Washing.—** Wash all fresh vegetables thoroughly. Use a brush to clean celery, carrots, beets, potatoes, turnips, parsnips, or any vegetable that is pulled or dug from the soil. Tightly grown blossoms, heads, or stem-type vegetables such as asparagus, broccoli, cabbage, cauliflower, and brussels sprouts will harbor worms and insects that may not be dislodged by casual washing. Soak vegetables of this type in cold saltwater (1 tablespoon salt to 1 quart of water) for 1/2 to 1 hour and then rinse thoroughly. Turn cauliflower blossoms end down in the soaking water; cut cabbages in halves or quarters and remove the cores.

Wash leaf-type vegetables such as spinach, collards, kale, and turnip greens in several changes of cold water to remove dirt and sand particles. Lift these vegetables from the water instead of draining the water off. The dirt and grit will remain in the washing pan or sink. If this water is drained or poured off, the dirt will remain on the vegetables.

**Retaining or Restoring Freshness.—** After vegetables have been washed clean, keep them in a cool storage place until they are to be prepared.

Wilted vegetables can be refreshened by placing them in ice-cold water to which one-half cup of vinegar per gallon of water has been added. When they are freshened, the vegetables should be covered with a

clean, damp cloth and placed in a cool storage room until you are ready to use them.

Keep the time between preparation and cooking as short as possible. Valuable vitamins are lost when vegetables are soaked too long or are allowed to remain at warm temperatures for several hours.

**FROZEN VEGETABLES.—** Frozen vegetables have the appearance and very nearly the flavor of fresh vegetables. Like the dehydrated vegetables discussed previously, they are easy to prepare; the precooking tasks have been done. Frozen vegetables have been cleaned and trimmed and are ready to use.

**CANNED VEGETABLES.—** Vegetables that are canned have been cooked in the container and need only to be brought to the boiling temperature just before they are served. Never boil a canned vegetable; always avoid overheating or overcooking. The liquid from tamed vegetables should be saved and used in soups, sauces, or gravies. Follow the AFRS guidelines for heating canned vegetables.

**DRIED VEGETABLES.—** A variety of dried vegetables are used in Navy messes. Dried beans and peas are used in soups and entreés (supplemented with meats such as ham, bacon, or ground beef as in chili con came). Dried garlic is used as seasoning. Dried onions are used extensively in salads and cooking.

**DEHYDRATED VEGETABLES.—** Dehydrated vegetables are now widely used and popular in Navy messes. Their small weight and volume make them convenient to store. They are easy to prepare. All the precooking tasks associated with raw vegetables have been done for you. They are peeled, diced, sliced, or chopped, and ready to use. They eliminate waste and ensure portion control.

Precooked potato granules, sliced raw potatoes, raw cabbage, chopped onions, and green peppers are some of the dehydrated vegetables used by the Navy. They are reconstituted by adding a measured quantity of the vegetable to a measured volume of water. The temperature of the water will vary (lukewarm or cool) with the specific dehydrated vegetable being reconstituted as will the length of time required for the reconstituting process (15 to 30 minutes). Recipes in the Q (vegetable) section of the AFRS give more detailed instructions for reconstituting dehydrated vegetables.

**Cooking Methods**

Vegetables may be baked or sauteéd they may be simmered or steamed; they may be served with butter or covered with an appropriate sauce; or, after they are simmered or steamed, they may be creamed, mashed, or sauteéd.

The basic methods of cooking vegetables are baking, steaming, and simmering.

**SIMMERING.—** Vegetables are simmered in water with seasonings in steam-jacketed kettles or covered stockpots. Vegetables will lose their fresh appearance, flavor, and nutritive value if they are overcooked.

**STEAMING.—** Steaming is an excellent method of cooking most fresh vegetables. It is faster than other methods and helps to preserve the fresh appearance and nutritive value of the vegetables. Follow the manufacturer's directions for cooking time and methods for each kind of vegetable. Guidelines for steam cooking are given in the AFRS.

**BAKING.—** Cook the vegetables in dry heat in an oven with the addition of little or no water. Dry baking is usually limited to potatoes and squash.

**OVEN FRYING.—** Some vegetables may be parboiled and then placed in a well-greased roasting pan in the oven to complete cooking. Hash browned and home fried potatoes may be oven fried.

**DEEP FAT FRYING AND PANFRYING.—** Potatoes, onions, and other vegetables such as eggplant, cauliflower, and okra may be french fried. Vegetables that are deep fried and panfried should be tender and cut into uniform size pieces. Panfried vegetables are cooked in a small amount of fat on top of the range. Sautéing is another term for panfrying.

**STIR-FRYING.—** Carrots, celery, cabbage, sweet peppers, mushrooms, dried and green onions, broccoli, and cauliflower may be stir-fried. Stir-frying is sautéing in hot salad oil or shortening in progressive steps. The cooked vegetables are crisp and crunchy in texture.

**PROGRESSIVE VEGETABLE COOKERY.—** To make sure a continuous supply of freshly cooked vegetables is available on the serving line, cooking periods must be staggered so that several small batches of vegetables will be cooked one after another. This also helps control waste because a new batch will be started only if it is needed.

Short cooking time is best. Cook only a small quantity of vegetables at a time. Vegetables must be

cooked in the shortest time possible and in a small amount of water. Never use baking soda to preserve color. Overcooking, cooking in too much water, or using soda in the water destroys the nutrients you are trying to conserve.

In fact, undercook rather than overcook vegetables. This is especially applicable when you know the cooked vegetable is to be placed on the steam table or is to have a second heating or cooking period, such as creaming, scalloping, or baking.

To determine if the vegetable is done, press pieces of the vegetable between the thumb and forefinger and taste the sample. If it is done, the vegetable should be tender but have a definite bite quality.

## SALADS

Salads have an important place on the menu. They contribute something both nutritious and refreshing to the lunch or dinner meal. Fruit salads and vegetable salads are the most popular. They also introduce valuable vitamins, necessary minerals, and color into the meal.

Salads can be made quickly and easily if a few simple rules are followed. This is equally true for individual salads that often seem more appetizing and receive greater acceptance than a large dish of salad.

After a crisp, refreshing, and attractive salad is produced, it should be served so that none of this attractiveness is lost. Select a cool place for assembling and serving the salad. Bring individual salads from the refrigerator, a few at a time, so that they will remain crisp.

### Salad Ingredients

Salads consisting of fruits, vegetables, meat, or a combination of these ingredients provide a good menu for diet-conscious people or people who are trying to lose weight.

Nearly all salads contain some fresh, crisp greens, at least as a garnish; beyond that, however, the range of ingredients is very wide. A salad may consist of greens tossed with dressing, or it may consist of a combination of vegetables or fruits (or both). There are also hearty salads that may be used as the main dish of the meal.

**SALAD GREENS.—** Select your salad greens carefully. You have a wide choice of greens that are suitable for a salad foundation—lettuce, endive, escarole, young spinach, and cabbage (fig 5-9.) These may also be used as one of the main ingredients of the salad itself. Parsley and the inner tender leaves of curly endive are good for a garnish.

Sort, trim, wash, and crisp the greens before making the salad. Wash them carefully to free them of sand and earth particles. Drain them well. Hand cut the lettuce and cabbage into strips or pieces. Place the prepared greens in pans, cover them with wax paper or a damp cloth, and refrigerate. They should be drained thoroughly and be free of excess water before they are placed in the serving line. They should be one of the very last parts of the meal to be prepared.

**SALAD VEGETABLES.—** Fresh, canned, or dehydrated vegetables may be used for salads. Select the fresh vegetables with care. Wash them thoroughly. Trim and peel them, if necessary, and cut them into uniform sizes. Cook those that need cooking. When canned vegetables are to be used in a salad, the liquid drained from the cans should be reserved and used in soups, sauces, or gravies. The canned vegetables may be marinated in French dressing before being used in a salad. Dehydrated cabbage, green peppers, onions, and string beans may be reconstituted and used in salads.

Salads used for the main course for lunch or dinner should be substantial and provide the food values comparable to any other main dish.

**SALAD FRUITS.—** Fruits add variety as well as color and texture to the salad bar. Fresh, frozen, and canned fruits maybe used.

### Salad Dressings

The salad dressing is as important as the salad itself. Each type of dressing can take on a new flavor by the addition of different seasonings and herbs.

**BASIC DRESSINGS.—** The two basic kinds of salad dressings are French dressing and cooked salad dressing. Commercial salad dressing is similar to mayonnaise except that a cooked starch paste is added and less oil is used than in mayonnaise. French dressing is basically oil and vinegar to which many kinds of seasonings may be added. Commercial French dressing usually contains tomato paste or puree as well as emulsifiers that keep the oil and vinegar from separating.

**SALAD DRESSING INGREDIENTS.—** A variety of seasonings can be added to the oil and acid basic ingredients (usually lemon juice or vinegar) of a salad dressing to produce different kinds of dressings that complement a specific type of salad.

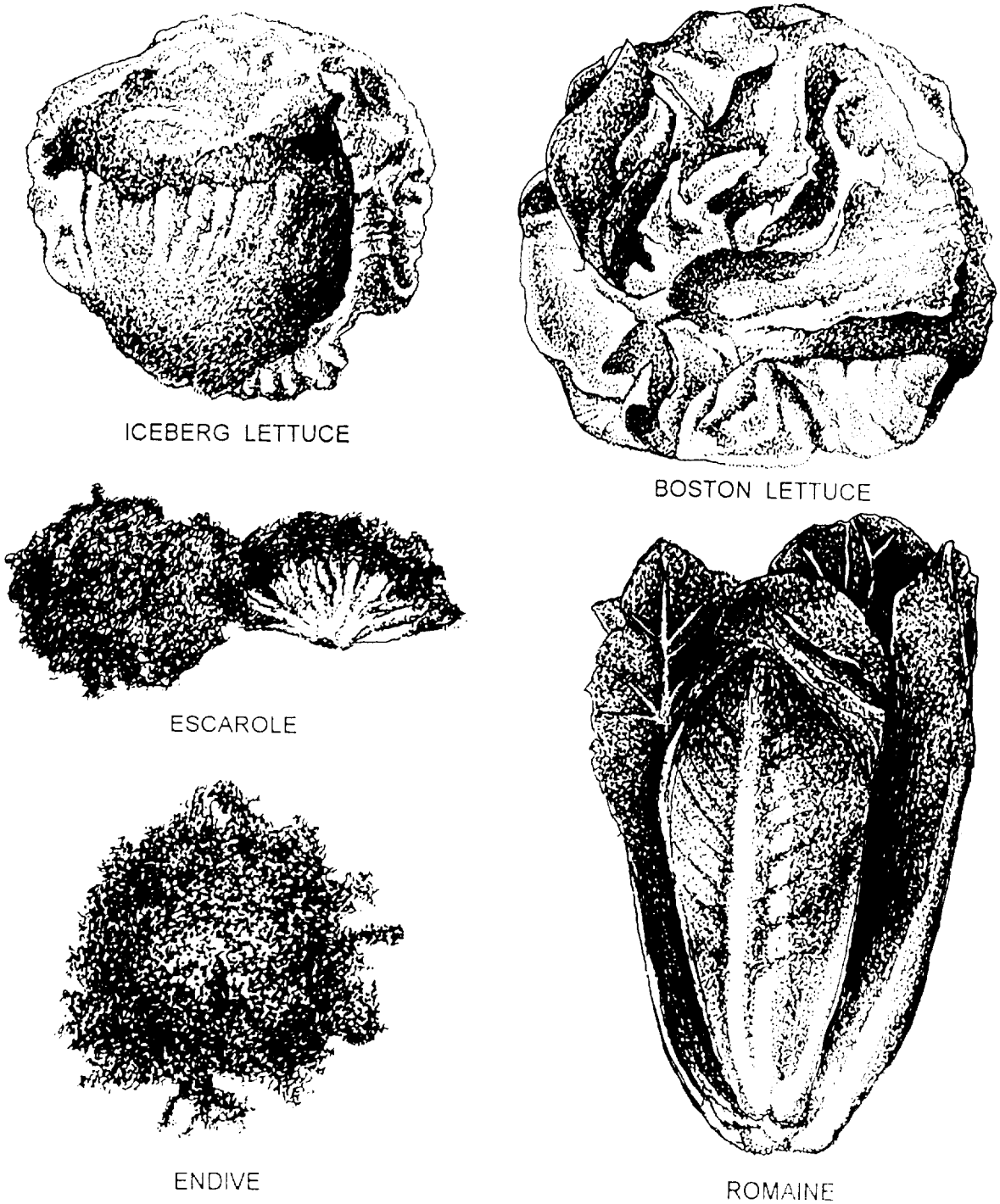



**Figure 5-9.—Salad greens.**

**Salad Oil.—** Salad oil is an important ingredient in salad dressings. It must be fresh. Salad oil can become rancid and have an unpleasant taste if it is exposed to light, air, and heat. Oil will mix temporarily with liquid after being shaken or beaten, but if the mixture is allowed to stand, it will separate again into layers.

**Acid.—** Fruit juices or vinegar are the acid ingredients in salad dressings. Pineapple or lemon juice can be used instead of vinegar in some recipes.

**Seasonings.—** Salt, pepper, and sugar are the usual seasonings in salad dressings. Other seasoning such as

mustard, ground red pepper, and herbs add color and flavor.

**SALAD DRESSING PREPARATION.—** The basic rule in making salad dressings is to make them in advance so that the seasoning will be well blended. Galley-prepared mayonnaise tends to separate if it is not properly made. Some important things to remember are the following:

- Have ingredients at room temperature before mixing
- Combine ingredients exactly as directed in the AFRS
- Make sure the oil is incorporated each time it is added before adding more oil
- Use a bowl that is deep enough to allow the mixture to be well beaten

Mayonnaise should not be stored where it could freeze, nor should it be kept at warm temperatures. The container should be covered and refrigerated when not in use. Mayonnaise will curdle or separate if the oil is added too fast or if the mixture is beaten too little after each addition of oil. If mayonnaise separates, it may be reformed by adding it very gradually to egg yolks (use one egg yolk per gallon of mayonnaise).

**NOTE:** Only pasteurized frozen eggs are to be used in galley-prepared mayonnaise or salad dressings.

As a rule, salad dressing should be added to a fruit or raw vegetable salad not more than a few minutes before you are ready to serve the salad. If you are preparing salads to be set out on the salad bar, place the various types of salad dressings in separate containers so that each patron may have a choice. Remember to use small-sized containers for the dressings. Any salad dressing that is left over after the meal has been served should be discarded.

## RELISHES

Relishes may be used in place of, or with, a salad. The AFRS contains guidelines for relish preparation.

Raw carrots sliced lengthwise, celery, radishes, cauliflower flowerets, green pepper rings, olives, and pickles make excellent relishes and increase the attractiveness of a meal. All raw vegetables, except leafy varieties, should be refrigerated in icy cold water for an hour or more. This should be done before they are served. This process makes the vegetables crisp and tender.

## HORS D'OEUVRES

Hors d'oeuvres are appetizers that are nippy, high-flavored mixtures of various foods designed to be eaten from the fingers or from toothpicks. Preparation and service of hors d'oeuvres are customarily associated with private messes.

When hors d'oeuvres are served, they are normally served before formal or informal meals. Hors d'oeuvres are also served at elaborate functions where, as a rule, a meal is not served

Generally, there are two types of hors d'oeuvres: cold and hot. Some examples of cold hors d'oeuvres are ham rolls, fish balls, deviled eggs or shrimp, cheese carrots, or stuffed celery. Hot hors d'oeuvres are usually broiled, baked, or fried in deep fat and served fresh from the broiler, oven, frier, or a chafing dish.

Dips and spreads are sometimes offered with hors d'oeuvres. They can accompany them or be used to complement various crackers or vegetables. Most of the different dips and spreads resemble salad dressings in their composition. Therefore, the same precautions should be followed during preparation, serving, and storing.

## SANDWICHES

Sandwiches make satisfying meals and are especially convenient to serve in case of an emergency. This is true under battle feeding conditions when personnel are isolated from regular messing areas, or under similar circumstances. When sandwiches are prepared, remember that they will probably be the primary item of that particular meal and should be substantial. Whenever possible, sandwiches should be served with a beverage, fruit or fruit juice, and raw vegetables that can be eaten from the hand. There is no limit to the interesting and tasty food combinations that can be used for filling sandwiches. Many good recipes are listed in the AFRS.

### Sandwich Ingredients

All sandwiches will have a bread of some sort. In addition to the bread, a sandwich will include one or more of the following: a sandwich filling such as egg salad; sliced cold meats; or a spread such as deviled ham; and individual condiments such as catsup.

**BREADS AND ROLLS.—** Sandwiches may be made with any kind of bread. Varying the bread helps to avoid monotony. The kind of bread used should be

appropriate for the type and flavor of the filling to be used. There is no set rule for such combinations as the choice is determined by individual taste. Sandwiches may be served hot or cold.

Breads that are used most often include white, rye, pumpernickel, and whole wheat as well as various types of rolls and buns.

When you are making sandwiches, use slightly firm bread. Day-old bread is preferable because it is more easily handled than freshly baked bread. Bread requires special handling to prevent it from becoming stale. To prevent moisture loss or absorption, observe the tips listed next on wrapping and storing bread and rolls:

- Store bread in a moistureproof wrapper.
- Store bread at moderate temperatures (75°F to 85°F) in a clean, dry space away from food.
- Maintain a clean, dry storage place for the bread and rolls. Separate from other stores to prevent absorption of odors and flavors.
- Bread should not be stored in chill spaces because it will stale rapidly. However, freshly baked and cooled bread and rolls may be wrapped in moistureproof material and frozen for later use.

**SANDWICH FILLINGS.—** The choice of fillings should be determined either by when the corresponding sandwiches with be eaten or by how the filling is used. For example, they may be served in sandwich meals (box lunches), as appetizers, or as a food item on a regular menu or fast-food serving line.

Some of the types of fillings are salad mixtures such as tuna, egg, and ham. Such mixtures as ground meat, chopped egg, fish or shellfish, or any filling containing mayonnaise or salad dressing should never be made for sandwich meals. These foods are likely to be contaminated with bacteria that will grow rapidly at room temperature and can cause illness.

Cold cuts and peanut butter and jelly are suitable fillings for sandwiches to be served either in or away (such as box meals) from the GM.

**Sliced Cold Meat.—** Cold sliced turkey, chicken, roast beef, bologna, salami, ham, or cheese are considered cold cuts.

When used as fillings, these meats should be cooked according to AFRS recipes. After being cooked, the meat should be covered and refrigerated without slicing until just before the sandwiches are to be prepared. If the meat is sliced ahead of time, it will dry out even if it is covered and refrigerated. When you are ready to prepare sandwiches, slice the meat thinly and remove gristle and excess fat. Thinly sliced sandwich meats are more tender and juicy than thickly sliced meats. Slice only enough for immediate use.

**Spreads and Individual Condiments.—** To avoid risk of contaminations and to allow the user an individual choice, such spreads as salad dressing, mayonnaise, mustard, or catsup should be packed separately. Always follow the AFRS directions for making sandwiches.

**Sandwich Variations**

The description and preparation methods for some of the sandwich variations are as follows.

**CLUB SANDWICHES.—** Club sandwiches are made with three or more slices of toasted bread and two different fillings, one in each layer. Each sandwich is cut into quarters to form triangles. Toothpicks maybe used, if necessary, to hold layers together.

**GRILLED OR TOASTED SANDWICHES.—** In grilled or toasted sandwiches the filling is often cheese placed between two slices of bread. The top and bottom of the sandwich is spread with melted butter or margarine, and the sandwich is grilled on both sides. Also, these sandwiches may be lightly brushed with melted butter, placed in sheet pans, and toasted in the oven.

**OPEN-FACED SANDWICHES.—** Open-faced sandwiches may be either one or two slices of bread covered with any desired filling including slices of meat, cheese, or tomatoes. When two slices of bread are used, they are placed side by side rather than one on top of the other.

**SUBMARINE SANDWICHES.—** Submarine sandwiches (hero, hoagie, grinder, or poor boy) are prepared from French bread or a hard roll cut in half lengthwise. Each half is spread with salad dressing. Layers of thinly sliced salami, bologna, cheese, ham, tomatoes, and lettuce are then arranged on the bottom half. The sandwich is covered with the top half and cut vertically into portions. If these sandwiches are used for box meals or bag lunches, the salad dressing, tomatoes, and lettuce should be portioned and wrapped separately.

**SLOPPY JOES.—** Sloppy Joes are sandwiches made with barbecued ground beef spread between halves of toasted sandwich buns.

**HOT SANDWICHES.—** Hot sandwiches are usually served open-faced with sliced meat and gravy.

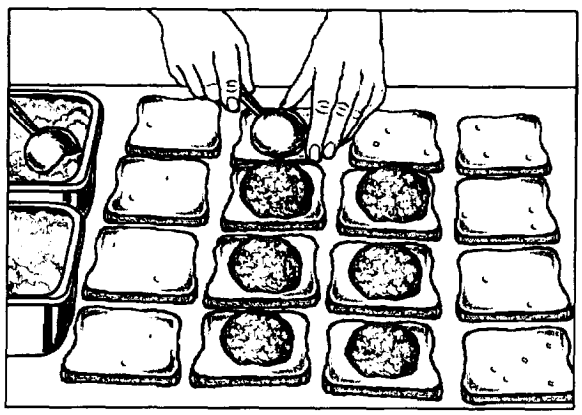
However, they are often served with a soup, a potato, and vegetables. They are good main dishes for lunch or dinner when served this way.

**FINGER SANDWICHES.—** Finger sandwiches are two slices of bread with a filling such as tuna, egg, or ham salad cut into three rectangular strips. Finger sandwiches are normally served as appetizers or for ceremonial occasions. Because these sandwiches contain salad mixtures, they should not be used in box lunches.

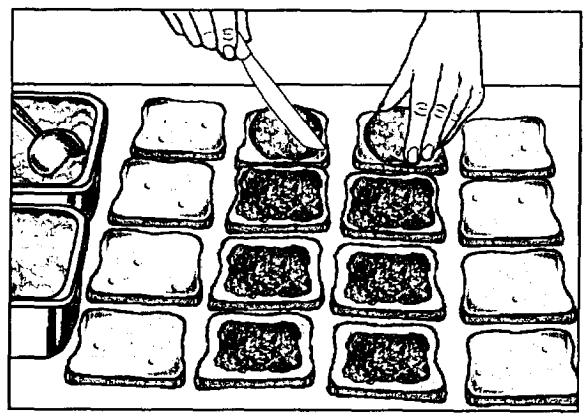
### Sandwich Production

To make many sandwiches quickly, follow the steps shown in figure 5-10. Have all sandwich material ready, allow ample work space. Sanitary procedures and precautions must be strictly followed in the preparation and serving of sandwiches. Some of these procedures and precautions are listed next.

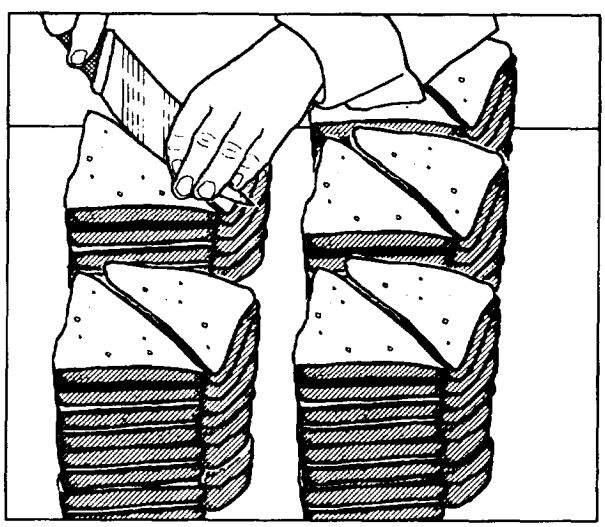
- Fillings for cold sandwiches are highly susceptible to bacterial contamination, and every precaution should be taken when preparing and serving sandwiches. Never allow sandwiches to stand at room temperature for more than 4 cumulative hours. This 4-hour period includes the time spent chopping or dicing food after it has been cooked. If the sandwiches will not be consumed immediately, they must be held at temperatures below 40°F.



**STEP 1:** Use a scoop to place salad fillings on two center rows of bread.



**STEP 2:** Spread fillings to edge of bread, using two strokes. Place matching slices of bread on top of filling. Use both hands.



**STEP 3:** Stack sandwiches and cut in half diagonally.

**Figure 5-10.—Steps in producing sandwiches with salad fillings.**

When you are refrigerating fillings, they should be placed in shallow pans so that the contents will be quickly and completely chilled. Whenever possible, sandwiches should be made to order.

Sandwiches intended to be eaten hot, such as a reuben or hot roast beef, must be prepared upon customer request or immediate before serving in a feeding operation such as a GM.

- Never place or prepare sandwiches on a cutting board or surface that has been used to prepare raw chicken or turkey.
- Keep sandwich counter and equipment thoroughly clean and sanitized.
- Clean chill boxes and accessories frequently to avoid mold and undesirable odors.
- Use sanitized utensils instead of hands whenever possible.
- Requisition and prepare food in the quantities needed so that there will be a rapid turnover and as few leftovers as possible.
- Keep the time between preparation and consumption to a minimum.
- Pack or serve lettuce, tomatoes, and spreads used in bag or box lunches separately.
- Keep the filled sandwiches at a temperature of 40°F or lower if possible.
- Avoid leftovers. Do not use any foods for sandwich fillings, including leftover meat and eggs, that have been held at 40°F or over for more than 30 minutes. Bacteria grow more rapidly in some foods than in others.
- Immediately following the preparation, wrap each sandwich separately and refrigerate. Never use a dampened cloth or towel to keep bread or sandwiches moist.
- Avoid stacking a large number of sandwiches or placing sandwiches in cardboard boxes. This method actually insulates the food and prevents it from cooling as fast as it should to the desired storage temperature.
- When sandwich meals are prepared for box lunches, the boxes should be marked in the following manner to make sure customers know the safe time limit within which the meals should be eaten:

Date and time issued: _____

Keep under refrigeration or eat by:

(within 4 hours after time of issue)

Prepared by: _____

(initials/time/date)

**Box Lunch Assembly**

For efficient assembly of box lunches, devise a checklist of all items to be included and post where it is plainly visible to those responsible for filling the orders. Be sure to list items to be served with the meals, such as salt and pepper, cream substitute and sugar, and other appropriate condiments and spreads.

Because choices of food items for box meals are limited, menu planners may find it difficult to include a wide variety of food. The AFRS has many recipes for sandwiches, breads and rolls, desserts, and relishes that will help give variety to menus.

Selections from the following food items are suggested for inclusion in breakfast, lunch, or dinner box or bag meals:

a. Fruit
b. Juice
c. Cereal, ready-to-eat, instant or cold
d. Breads, pastries, rolls, butter, or jam
e. Eggs (especially hard-boiled)
f. Soup
g. Cheese
h. Meat
i. Relishes (raw vegetables, pickles, or olives)
j Condiments and salad dressings
k Accompaniments (cranberry sauce or applesauce)
l. Desserts (pudding, yogurt, or bakery items)
m. Milk
n. Beverages (cold or hot)
o. Raisins, nuts, or granola-type bars

Suggested menu patterns for box meal menus can be found in NAVSUP P-421.

## Soups

Soup is a tasty, popular food. It is nutritious, wholesome, and stimulates the appetite. Soup should be served at least once a day in cold weather, if practical, and at least every few days regardless of the weather. A key rule in serving soup is that it be served as hot as possible.

**GALLEY-PREPARED SOUPS.—** There are four basic kinds of soup:

1. Light soups are made from clear, unthickened stock.
2. Heavy soups are made from stock vegetables, rice, or pasta such as noodles, macaroni, and spaghetti.
3. Cream soups are made with milk, stock, or vegetables and lightly thickened. They should be heated to serving temperature, but never allowed to boil.
4. Chowders are made with fish, shellfish, or vegetables.

There are three basic soup ingredients: stock vegetables, and thickeners. These basic ingredients are discussed next.

**Stock.—** Stock is made by cooking meat bones, poultry bones and trimmings, vegetables, and seasonings in water. Alternately, it is made by using dehydrated soup and gravy bases, which saves time, labor, and space. These various bases contain salt; therefore, the amount of salt added should be determined by careful tasting during the cooking process.

The standard stock items, instant beef, chicken, or ham soup and gravy base, may be reconstituted for use in any soup recipe. These powdered bases are seasoned and when they are reconstituted in boiling water they have the characteristic flavor of beef, ham, or chicken broth. The proportions that should be used to reconstitute these bases are included in the A (miscellaneous) section of the AFRS.

**Vegetables.—** The vegetables most commonly used for soups are celery, carrots, peas, beans, onions, green peppers, and tomatoes. Vegetables are cut into small cubes, or into matchlike strips that are called julienne. Vegetables used in soups should be cooked according to the instructions given in the AFRS for soup.

**Thickeners.—** Soups are thickened by adding a roux or a paste. A roux is a mixture of fat and flour. A cold, light roux is usually added to soups that are to be thickened. In onion soup, for example, the cold roux is stirred into the hot soup stock and the soup is cooked until no taste of raw starch remains. Roux may be prepared ahead of time and refrigerated. A roux maybe prepared by two methods: the cold roux method or the warm roux method. Cold roux is prepared by combining flour with liquid fat, then stirring until a smooth paste is formed. In the warm roux method the fat is first melted over low heat and then the flour is added.

A paste is prepared by whipping flour or cornstarch into a cold liquid (usually water) and then adding it to hot liquid that is cooked until it thickens. In the final step of preparing bean soup, for example, a flour and water paste is stirred into the soup that is then cooked for 10 minutes.

**GALLEY PREPARED SOUPS.—** The individual recipe in the soup section of the AFRS specifies the types and amounts of seasonings that should be used. When meat or chicken stock is made, the flavor from the ingredients used is very concentrated; therefore, it is essential to use accurate amounts of the ingredients. Just before the soup is to be served, check it again for proper seasoning. It is better to add more seasoning to the stock or soup a short time before it is served, rather than have a soup so highly seasoned it is unpalatable. If the taste check indicates that the soup is too salty, add sliced raw potatoes to the soup, bring soup to a simmer for a few minutes, then remove the potatoes.

**COMMERCIALLY PREPARED SOUPS.—** Dehydrated, instant, condensed, and ready-to-serve soups are not only easy to prepare but they are also time- and space-savers.

Dehydrated soups such as chicken noodle, green pea, and tomato vegetable are prepared by merely adding the specified amount of boiling water. Then the mixture is covered and allowed to simmer for the length of time specified on the container. The finished product is similar in appearance and flavor to the same type of soup made with raw food items.

## Sauces

Sauces add to the appearance and flavor of food, but they should never be overpowering. Sauces should be handled carefully to avoid contamination and food-borne illness. Store in a chill space and never hold them longer than 4 cumulative hours at temperatures between 40°F and 140°F.

**CREAM OR WHITE SAUCE.—** Cream or white sauces are made with butter or margarine, flour, and milk and have many variations. These sauces must be cooked over low heat. They require constant stirring to avoid scorching. The sauce is cooked until it coats the back of the spoon.

Thin and medium white sauces are used to bind ingredients together in scalloped meat, fish, egg, and vegetable dishes. Medium white sauce may also be served over food.

**BUTTER SAUCES.—** A white sauce with a high percentage of butter and little or no seasoning other than salt is considered a butter sauce. This sauce is used principally with green vegetables, such as asparagus and broccoli, and with fish and shellfish.

**OTHER SAUCES.—** Sauces served with meat, chicken, seafood, omelets, and spaghetti are prepared according to recipes in the AFRS. Also, commercially prepared sauce mixes are available. These include basic tomato, sweet and sour, cheese, barbecue, taco, and enchilada sauces. Directions for use are found on the containers. Some examples of sauces and their uses are as follows:

Sweet, thickened:

Raisin ..... Baked ham
Pineapple ..... Baked ham

Unsweetened, thickened:

Hot mustard ..... Ham
Tomato ..... Veal steaks
Stuffed green peppers

Uncooked, unthickened:

Tartar ..... Seafood
Seafood cocktail ..... Seafood

Cooked, unthickened:

Barbecue ..... Beef, pork
Spaghetti ..... Spaghetti

**Gravies**

Any gravy served should go with the food it is intended to compliment. The O section of the AFRS contains many recipes to be served with meat and poultry. Thickened gravies are made by adding flour to the pan drippings left after roasting and browning meats. This flour mixture forms a roux that is then added to stock. The gravy is stirred and simmered until the mixture thickens. There are numerous types of gravies. A good gravy should be as smooth as cream.

**CREAM GRAVY.—** Cream gravies are made by adding milk to the roux instead of stock or water. Cream gravy is usually served with chicken or ham.

**NATURAL PAN GRAVY.—** Natural pan gravy (au jus) is unthickened gravy that is usually served with roast beef. Water or stock is added to the meat drippings and the gravy is allowed to simmer until hot.

**BROWN GRAVY.—** Brown gravy is prepared by cooking the flour and fat mixture (roux) until it is brown. Brown gravy is the basic gravy used to make giblet, mushroom, onion, and vegetable gravies. Brown gravy mix is a dry mix that requires only the addition of hot water.

**Gravy Preparation**

Thickeners, liquids, fats, and seasonings are combined to form gravies. Certain tips will assist you in preparing and serving gravies.

**THICKENERS.—** To make smooth gravy, a roux must be used for thickening. Flour or other starch will form lumps if added directly to hot liquid. To make brown gravy, the flour and fat mixture (roux) is cooked until it is a rich, brown color. The roux is added to the hot stock and the mixture is simmered until it is thickened. To make cream gravy, the roux is cooked, but not browned. The roux is added to milk or light stock and cooked until thickened and no taste of the starch remains.

**LIQUIDS.—** If a large amount of gravy is prepared, there should be enough stock to ensure a good flavored gravy. Tomato juice or the liquid saved from mild-flavored cooked or canned vegetables (beans, peas, carrots) can be substituted for part of the water. Reconstituted soup and gravy base can be substituted for all or part of the stock. Since salt is an ingredient in these bases, no additional salt is added until cooking is completed. The gravy should then be tasted and salt added only if necessary.

**FATS.—** Fat from the pan drippings provides flavor. If there is not enough fat remaining in the pan from the meat to make a sufficient quantity of gravy, melted shortening can be added.

**SEASONINGS.—** Seasoning the gravy is important. Avoid overseasoning. Add salt and pepper in moderate amounts and taste the gravy during preparation to see if more is needed.

**PREPARATION AND SERVICE TIPS.—** If lumps should occur when you are making gravy, strain the gravy or whip vigorously with a wire whip. If gravy is not to be served immediately, cover the pan and keep it hot; or it may be refrigerated and reheated when ready to use. Gravy should be handled carefully to avoid contamination and food-borne illness. Store it in a chill space and never hold gravy longer than 4 cumulative hours at temperatures between 40°F and 140°F.

### Dressings

Dressings are usually served as the starch addition of a lunch or dinner meal when the entreé consists of a poultry product such as turkey.

The terms *dressing* and *stuffing* are often used interchangeably, but they both actually refer to dressing. If the dressing is cooked inside the poultty, it is referred to as stuffing.

Excellent dressings can be prepared that are not cooked inside the birds. Pan-baked dressing requires more moisture and is less firm than stuffing, but is easier to prepare and easier to serve. Good dressing is light and moist, not heavy and pasty.

Poultry stuffed with dressing is not recommended for large-scale food operations such as GMs because it increases cooking time, imposes a larger workload on foodservice personnel, and it does not improve or enhance the flavor of the meat. Most importantly, stuffing paltry is a sanitation risk and increases the possibility of food-borne illness.

The AFRS includes the basic bread dressing recipe and its many variations that may be served with either chicken or turkey.

## CEREALS, PASTA, AND RICE

Cereals, pasta, and rice are all grain products that are used as the starch portion of a meal.

### Cereals

Cereals are foods made from grains of wheat, oats, corn, rice, rye, and barley. Cereals are often referred to as breakfast foods, but are not limited to the breakfast meal. Cereals can be used in many types of recipes. The types include instant, quick-cooking, and cold ready-to-eat cereals.

Instant cereals do not require further cooking. They are simply mixed with boiling water before serving.

Quick-cooking cereals require a shorter cooking time than regular cereals. To prevent quick-cooking cereals from forming lumps, they should be stirred slowly into rapidly boiling water. Quick-cooking farina is mixed with cold water and then added to boiling water. These cereals should be stirred constantly until they boil. After they begin to boil, reduce to a simmer and stir them occasionally. Overstirring and overcooking will cause cereal to be sticky and gummy.

Ready-to-eat cold cereals require no cooking and are served with cold milk and sugar. No added sugar is needed for the coated or frosted cereals. For variety, sliced peaches, strawberries, prunes, or bananas maybe added.

### Pastas

Pastas (macaroni, spaghetti, vermicelli, and noodles) are produced from semolina durum wheat flour, farina, or hard wheat flour (other than durum wheat flour) and water. Egg noodles also contain eggs. The mixtures are rolled, shaped, and dried in various forms. The only difference between vermicelli and spaghetti is that the individual strands of vermicelli are finer and require less cooking. They may be used interchangeably in recipes specifying spaghetti or vermicelli.

Pastas should be added to vigorously boiling, salted water and stirred so that they will not stick together or to the bottom of the kettle. A small amount of salad oil is added to the water to help to prevent sticking. Pastas should be drained as soon as they have finished cooking. If pastas are overcooked, they become soft and gummy.

### Rice and Barley

The rice products used in the military feeding programs are parboiled, long-grain, and medium-grain rice. They need not be washed before cooking. Cooked long-grain rice should appear light textured and the individual grains should stand apart. Medium-grain rice, when cooked, will clump together. This type of rice is preferred in Oriental dishes. Directions for proper cooking by steaming, simmering, and baking are contained in the AFRS. Rice may be served plain, as a potato substitute, combined with other ingredients in a main dish, added to salads, or topped with highly seasoned sauce. For variety, combine rice with herbs, spices, chopped onions, or nuts. Rice pudding can be served for dessert.

Barley is a grain used principally as a soup ingredient.

### Popcorn

Popcorn is a snack food that usually is served during periods of relaxation such as watching movies or playing board or card games.

Popping popcorn is simple. You will either use a popcorn popper or use a large pot. For either method, just follow the instructions provided by the manufacturer. Salt and butter or margarine should be provided separately when serving popcorn to comply with today's fat and cholesterol health standards.

## BEVERAGES

Beverages are an important part of Navy meals. The preparation of high-quality beverages requires the skill, technique, and experience of an accomplished MS. The types of hot and cold beverages used in the GM include milk, coffee, tea, cocoa, fruit and vegetables juices, fruit-flavored drinks, and soft drinks. Good quality drinking water also should be available.

### Milk

Milk is one of the most important and most frequently used foods, as well as popular beverage. It is important to keep in mind that milk, served as a beverage or used in cooking, is a potentially hazardous food. To ensure safe, high-quality milk, follow these practices:

- Know the characteristics and recommended use of each type of milk. (See chapter 4 of NAVSUP P-421.)
- Select the proper types of milk to meet your foodservice operation's requirements and storage capacities.
- Handle milk according to safe, sanitary procedures.

For more information on milk, consult the NAVSUP P-486, volume I, and the *Manual of Naval Preventive Medicine,* chapter 1.

### Coffee

The preparation of coffee demands as much detailed attention as does any other part of the meal. Tastes for coffee vary widely. Some people prefer a weak brew while others enjoy a strong one. The AFRS contains directions for brewing various strengths. Good coffee will smell fragrant and mellow. The color will be a deep brown but not black. The taste will not be rancid, oily, or bitter. The strength of the coffee depends on the proportion of water used in relation to coffee grounds. A milder brew results from using either more water or less coffee than normally. Bitterness results from brewing the coffee too long.

Several suggestions that will help you produce brewed coffee of consistent quality follow:

- Store roasted coffee in an airtight metal container because coffee loses its flavor and aroma rapidly when exposed to air. Also, it will also absorb odors that lower its taste quality.
- Use older stocks first. Within 3 days after opening, vacuum coffee has lost much of its flavor.
- Always measure both the coffee and the water.
- Use fresh coffee at all times, and keep the coffee covered while it is brewing.
- Never allow coffee to remain in contact with boiling water as the flavor and aroma will boil off.
- Remove the grounds as soon as the coffee is made. Seepage from the grounds will ruin the flavor of the best coffee.
- Brewed coffee should not be held for more than 1 hour as it deteriorates in flavor and loses its aroma.
- Most important of all, keep the coffee-making equipment absolutely clean. Wash the urn with clear, hot water immediately after you have used it, and at the end of the day clean it with hot water and urn cleaner. Rinse thoroughly with clear water. Never use soap or soap powder

### Tea

Normally, two forms of tea are used; bulk tea and tea bags. Instant, powdered tea however, also has special uses in the military services.

The quality of brewed tea depends upon how fast the boiling water extracts flavor and color from the tea leaves; it is the tannin present in the leaves that gives the tea a bitter taste. Improper temperatures, brewing too long, and holding tea too long for service will bring out the bitterness of the extracted tannin.

The proper quantities of both water and tea should be measured carefully. Never guess at the amounts,

**HOT TEA.—** You will not have any trouble making excellent tea if you follow a few simple rules:

- When loose tea (not enclosed in a cloth bag) is placed in the urn or kettle, the tea should be strained after it has steeped for 5 minutes.
- Tea should be made just before serving.
- Do not boil; this brings out the bitter taste.
- Schedule preparation so that not more than 15 minutes will elapse between its preparation and service; hold prepared tea at 175°F to 185°F.

**ICED TEA.—** The following points should be observed when preparing tea to be served iced:

- A stronger brew is required for iced tea than for hot tea because of the diluting action of the ice,
- A tea concentrate may be brewed and chilled, then diluted before serving.
- Do not add cold water to the concentrate; this may produce cloudy tea. The concentrate should be poured into the cold water.
- The tea may be presweetened by dissolving sugar in the hot concentrate before diluting it with cold water.
- If desired, cut lemons into eighths to serve with tea

**Other Drinks**

The C (beverage) section of the AFRS contains many recipes for various fruit drinks and milk drinks that may be prepared and served with either lunch or dinner. When you prepare fruit drinks such as lemonade or grapeade, it is important to remember to make the drink early enough to allow time for thorough chilling in the refrigerator. If ice is used to chill the beverage, adjust the amount of water used.